

derivative, a xanthene derivative, a thioxanthene derivative, an acridine derivative, a porphyrin derivative, a coumarin derivative, a basestyryl derivative, a ketocoumarin derivative, a quinolone derivative, a stilbene derivative, an oxazine derivative and a thiazine dye can be used. Furthermore, photo-sensitizing dyes described in Dye Handbook, edited by S. Ohgawara, et al. (Kodansha, 1986), Chemistry of Functional Dyes, edited by S. Ohgawara, et al. (CMC, 1983), and Special Functional Materials, edited by C. Ikemori, et al. (CMC, 1986) can be used. These can be used singly or in combination of two or more.

Examples of the coumarin derivative are

3-(2-benzothiazolyl)-7-(diethylamino)coumarin,
3-(2-benzothiazolyl)-7-(dibutylamino)coumarin,
3-(2-benzothiazolyl)-7-(dioctylamino)coumarin,
3-(2-benzimidazolyl)-7-(diethylamino)coumarin and the like.

Examples of the ketocoumarin derivative are 3,

3'-carbonylbis(7-diethylaminocoumarin), 3,
3'-carbonylbis-7-diethylaminocoumarin-7'-bis(butoxyethyl)aminocoumarin, 3,
3'-carbonylbis(7-dibutylaminocoumarin) and the like.

Examples of the basestyryl derivative are

2-[p-(dimethylamino)styryl]benzothiazole,
2-[p-(dimethylamino)styryl]naphtho[1, 2-d]thiazole,
2-[(m-hydroxy-p-methoxy)styryl]benzothiazole and the like.

Examples of the merocyanine derivative are 3-ethyl-5-[(3-ethyl-2(3H)-benzothiazolylidene)ethylidene]-2-thioxo-4-oxazolidinone, 5-[(1, 3-dihydro-1, 3, 3-trimethyl-2H-indol-2-ylidene)ethylidene]-3-ethyl-2-

thioxo-4-oxazolidinone and the like.

Specific examples of a combination of the organic peroxide and the photosensitizing dye include combinations of 3, 3', 4, 4'-tetra(tert-butylperoxycarbonyl)benzophenone and NKX653, NKX3883, NKX1880, NKX1595, NKX1695, NK4256, NK1886, NK1473, NK1474, NK4795, NK4276, NK4278, NK91, NK1046, NK1237, NK1420, NK1538, NK3590 and the like, which are photosensitizing dyes produced by Nippon Photosensitizing Dye Laboratory Co., Ltd.

Specific examples of a combination of the carbonyl compound and the photosensitizing dye include benzil-Michler's ketone, and benzil-Acridine Yellow. As the photosensitizing dye used in combination with the amine compound, decarboxylated rose bengal is preferred. As the photosensitizing dye used in combination with the borate compound, a cyanine-based dye, such as a cyanine, an isocyanine and a pseudocyanine.

The amount of the photo-polymerization initiator (C) added to the composition of the invention is generally about from 0.1 to 15% by weight, and preferably about from 0.3 to 10% by weight, based on 100 parts by weight of the total amount of the allyl-based prepolymer (A), the (meth)acrylate-based compound (B) and the viscosity reducing agent (E) in the case where the carbonyl compound is used.

The hologram recording material composition of the invention can contain additives, such as a viscosity adjusting agent, a compatibility adjusting agent, a heat polymerization inhibitor and a chain transfer agent, and a solvent, if necessary.

Inorganic fine particles and organic fine particles can be used as the

viscosity adjusting agent. Examples of inorganic fine particles include silica gel fine particles "Daiso gel SP series" produced by Daiso Co., Ltd., "Silicia" and "Fuji silica gel" produced by Fuji Silicia Chemical Co., Ltd., "Carplex" produced by Shionogi & Co., Ltd., "Aerosil" produced by Nippon Aerosil Co., Ltd., "Reorosil", "Tokusil" and "Finesil" produced by Tokuyama Co., Ltd. and the like. Examples of organic fine particles include a diallyl phthalate-based polymer which can be obtained by methods described in JP-A 10-72510 and JP-A 10-310684; and "PB 200 series" produced by Kao Corporation, "Bell Pearl series" produced by Kanebo Ltd., "Techpolymer series" produced by Sekisui Plastics Co., Ltd., "Micropearl series" produced by Sekisui Fine Chemical Co., Ltd., and "MR series" and "MP series" both produced by Soken Chemical & Engineering Co., Ltd., which are described in "Most advanced technology of microfine particles", edited by S. Muroi (CMC, 1991).

The amount of the viscosity adjusting agent added is preferably about from 0.5 to 30 parts by weight per 100 parts by weight of the total amount of the allyl-based prepolymer (A), the (meth)acrylate-based compound (B) and the viscosity reducing agent (E).

The solvent to be used is a non-aqueous organic solvent. The solvent is effective to improve the film forming property, as well as the viscosity adjustment and the compatibility adjustment. For example, it is possible to use non-aqueous organic solvents such as acetone, xylene, toluene, methyl ethyl ketone, tetrahydrofuran, benzene, methylene chloride, dichloromethane, chloroform, methanol and acetonitrile. The amount of the solvent used is about from 0.5 to 1,000 parts by weight per 100 parts by